WHAT IS CLAIMED IS:

1. A plasma display panel device comprising:

a panel unit having a pair of a first and a second electrode, and a third electrode that intersects the electrode pair to define a discharge cell; and

a drive unit that drives the panel unit using a drive method having a write period and a sustain period, by applying, in the sustain period, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes in the sustain period, wherein

the drive unit changes a potential of the third electrode during the sustain discharge.

2. The plasma display panel device of claim 1, wherein

the change in the potential of the third electrode during the sustain discharge is a decrease from a potential V1 to a potential V2.

3. The plasma display panel device of claim 2, wherein

the drive unit increases the potential of the third electrode from a potential V0 to the potential V1 in the sustain period.

4. The plasma display panel device of claim 3, wherein the potentials V0 and V2 are equal.

5. The plasma display panel device of claim 3, wherein the potentials V0 and V2 are set in a range that will not cause a discharge to occur between the third electrode and the first or second electrode.

6. The plasma display panel device of claim 1, wherein a waveform of the voltage applied to the third electrode in the sustain period is a pulse waveform, and the change in the potential of the third electrode during the sustain discharge corresponds to a fall in the pulse waveform.

7. The plasma display panel device of claim 1, wherein the change in the potential of the third electrode occurs in a period equal to 80 % of a time constant of the sustain discharge.

8. The plasma display panel device of claim 1, wherein the electrode pair is provided on a first substrate, and the third electrode is provided on a second substrate

that is disposed facing the first substrate across a discharge space.

9. The plasma display panel device of claim 8, wherein

one of the electrodes in the pair is a scan electrode and the other electrode in the pair is a sustain electrode, and

the third electrode is a data electrode.

10. The plasma display panel device of claim 1, wherein

a waveform of the voltage applied to the electrode pair in the sustain period has a slope requiring a duration T to at least one of rise and fall.

11. The plasma display panel device of claim 10, wherein

T is in a range having a width of ±20 % with respect to a reference value in a range of 250 nsec to 800 nsec.

12. The plasma display panel device of claim 11, wherein

the reference value of T is in a range of 250 nsec to 500 nsec.

13. The plasma display panel device of claim 10, wherein

the voltage waveform applied to the electrode pair in

the sustain period is a pulse waveform that alternates repeatedly between high and low potentials, the high periods being of equal duration to the low periods, and

the change in the potential of the third electrode occurs in a range of T - 0.15 μsec to T + 0.25 μsec after the voltage waveform applied to at least one of the first and second electrode begins to change.

14. The plasma display panel device of claim 13, wherein

the change in the potential of the third electrode from V1 to V2 occurs in a range of T - 0.05 μsec to T + 0.15 μsec after the voltage waveform applied to at least one of the first and second electrode begins to change.

15. The plasma display panel device of claim 13, wherein

the potential of the third electrode decreases from a potential V1 to a potential V2 in the range.

16. The plasma display panel device of claim 13, wherein

the voltage waveform applied to the first electrode is out of phase with the voltage waveform applied to the second electrode by a half cycle.

17. The plasma display panel device of claim 10, wherein

the voltage waveform applied to the electrode pair in the sustain period is a pulse waveform that alternates repeatedly between high and low potentials, the high periods being longer than the low periods, and

the change in the potential of the third electrode occurs in a range of T - 0.25 μsec to T + 0.25 μsec after the voltage waveform applied to at least one of the first and second electrode begins to change.

18. The plasma display panel device of claim 17, wherein

the change in the potential of the third electrode from V1 to V2 occurs in a range of T - 0.15 μsec to T + 0.05 μsec after the voltage waveform applied to at least one of the first and second electrode begins to change.

19. The plasma display panel device of claim 17, wherein

the potential of the third electrode decreases from a potential V1 to a potential V2 in the range.

20. The plasma display panel device of claim 17, wherein

the voltage waveform applied to the first electrode is out of phase with the voltage waveform applied to the second electrode by a half cycle.

21. The plasma display panel device of claim 10, wherein

the voltage waveform applied to the electrode pair in the sustain period is a pulse waveform that alternates repeatedly between high and low potentials, the high periods being shorter than the low periods, and

the change in the potential of the third electrode occurs in a range of (i) T - 0.05 μsec to T + 0.35 μsec after the voltage waveform applied to at least one of the first and second electrode begins to rise, or (ii) T - 0.45 μsec to T - 0.05 μsec after the voltage waveform applied to at least one of the first and second electrode begins to fall.

22. The plasma display panel device of claim 21, wherein

the change in the potential of the third electrode from V1 to V2 occurs in a range of (i) T + 0.05 μsec to T - 0.25 μsec after the voltage waveform applied to at least one of the first and second electrode begins to rise, or (ii) T - 0.35 μsec to T - 0.15 μsec after the voltage waveform applied to at least one of the first and second electrode begins to fall.

23. The plasma display panel device of claim 21, wherein

the potential of the third electrode decreases from a potential V1 to a potential V2 in the range.

24. The plasma display panel device of claim 21, wherein the voltage waveform applied to the first electrode is out of phase with the voltage waveform applied to the second electrode by a half cycle.

25. A plasma display panel device, comprising:

a panel unit having a pair of a first and a second electrode, and a third electrode that intersects the electrode pair to define a discharge cell; and

a drive unit that drives the panel unit using a drive method having a write period and a sustain period, by applying, in the sustain period, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes in the sustain period, wherein

the drive unit changes a potential of the third electrode from V0 to V1 prior to the sustain discharge, and from V1 to V2 after the sustain discharge, and

the potentials V0, V1 and V2 are set so that $V1 > V0$ and $V1 > V2$, or $V0 > V1$ and $V2 > V1$.

26. The plasma display panel device of claim 25, wherein the drive unit increases the potential of the third electrode from V0 to V1 prior to a first sustain discharge,

sustains the potential V1, and decreases the potential of the third electrode from V1 to V2 after a second sustain discharge that is subsequent to the first sustain discharge.

27. The plasma display panel device of claim 25, wherein the drive unit decreases the potential of the third electrode from V0 to V1 prior to a first sustain discharge, sustains the potential V1, and increases the potential of the third electrode from V1 to V2 after a second sustain discharge that is subsequent to the first sustain discharge.

28. The plasma display panel device of claim 25, wherein one of the electrodes in the pair is a scan electrode and the other electrode in the pair is a sustain electrode, and

the third electrode is a data electrode.

29. The plasma display panel device of claim 25, wherein a cycle of the voltage waveform applied to the third electrode in the sustain period is an integer multiple of a cycle of the voltage waveform applied to the electrode pair.

30. The plasma display panel device of claim 29, wherein one of the electrodes in the pair is a scan electrode

and the other electrode in the pair is a sustain electrode, and

the third electrode is a data electrode.

31. The plasma display panel device of claim 25, wherein

a binding capacity of the first electrode with the third electrode is different from a binding capacity of the second electrode with the third electrode, and

the drive unit increases the potential of the third electrode when a potential of the electrode in the pair with the greater binding capacity is high.

32. The plasma display panel device of claim 31, wherein

one of the electrodes in the pair is a scan electrode and the other electrode in the pair is a sustain electrode, and

the third electrode is a data electrode.

33. A plasma display panel device, comprising:

a panel unit having a pair of a first and a second electrode, and a third electrode that intersects the electrode pair to define a discharge cell; and

a drive unit that drives the panel unit using a drive method having a write period and a sustain period, by applying,

in the sustain period, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes in the sustain period, wherein

the drive unit includes:

a detection subunit operable to detect a characteristic of an image for display by the panel unit; and

a control subunit operable to perform a control in the sustain period to change a potential of the third electrode according to the detected characteristic.

34. The plasma display panel device of claim 33, wherein

the detection subunit detects a brightness average of the image as the characteristic.

35. The plasma display panel device of claim 34, wherein

the detection subunit further detects a temperature of the panel unit as the characteristic, and

the control subunit conducts the control based on the detected brightness average and temperature.

36. The plasma display panel device of claim 33, wherein

a waveform of the voltage applied to the third electrode in the sustain period is a pulse waveform;

the change in the potential of the third electrode during the sustain discharge corresponds to a fall in the pulse waveform.

37. The plasma display panel device of claim 33, wherein

the voltage waveform applied to the third electrode in the sustain period is in synchronization with the voltage waveform applied to the electrode pair.

38. The plasma display panel device of claim 33, wherein

the control by the control subunit is conducted at a fall time of the voltage waveform applied to the third electrode in the sustain period.

39. A plasma display panel device, comprising:

a panel unit having a pair of a first and a second electrode, and a third electrode that intersects the electrode pair to define a discharge cell; and

a drive unit that drives the panel unit using a drive method having a write period and a sustain period, by applying, in the sustain period, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes in the sustain period, wherein

in the sustain period, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to hasten the generation of the sustain discharge in comparison to when the potential is not changed.

46. A plasma display panel device, comprising:

a panel unit having first and second substrates that face each other across a discharge space, a pair of a first and a second electrode being provided on the first substrate, and a phosphor layer and a third electrode that intersects the electrode pair to define a discharge cell being provided on the second substrate,

a drive unit that drives the panel unit using a drive method having a write period and a sustain period, by applying, in the sustain period, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes in the sustain period, wherein

in the sustain period, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to shift a region in which the sustain discharge is generated closer to the phosphor layer in comparison to when the potential is not changed.

41. A plasma display panel device, comprising:

a panel unit having a pair of a first and a second electrode, and a third electrode that intersects the electrode pair to define a discharge cell; and

a drive unit that drives the panel unit using a drive method having a write period and a sustain period, by applying, in the sustain period, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes in the sustain period, wherein

in the sustain period, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to shift a discharge path of the sustain discharge closer to the third electrode in comparison to when the potential is not changed.

42. A plasma display panel device, comprising:

a panel unit having a pair of a first and a second electrode, and a third electrode that intersects the electrode pair to define a discharge cell; and

a drive unit that drives the panel unit using a drive method having a write period and a sustain period, by applying, in the sustain period, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain

discharge between the first and second electrodes in the sustain period, wherein

in the sustain period, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to lengthen a discharge path of the sustain discharge in comparison to when the potential is not changed.

43. A drive method for a plasma display panel device that includes (i) a panel unit having a pair of a first and a second electrode and a third electrode that intersects the electrode pair to define a discharge cell, and (ii) a drive unit that drives the panel unit using the drive method, which has a write step and a sustain step, by applying, in the sustain step, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes, wherein

in the sustain step, the drive unit changes a potential of the third electrode during the sustain discharge.

44. The drive method of claim 43, wherein

the change in the potential of the third electrode during the sustain discharge is a decrease from a potential V1 to a potential V2.

45. The drive method of claim 44, wherein

in the sustain step, the drive unit increases the potential of the third electrode from a potential V0 to the potential V1.

46. The drive method of claim 45, wherein

the potentials V0 and V2 are equal.

47. The drive method of claim 45, wherein

the potentials V0 and V2 are set in a range that will not cause a discharge to occur between the third electrode and the first or second electrode.

48. The drive method of claim 43, wherein

a waveform of the voltage applied to the third electrode in the sustain step is a pulse waveform, and

the change in the potential of the third electrode during the sustain discharge corresponds to a fall in the pulse waveform.

49. The drive method of claim 43, wherein

the change in the potential of the third electrode occurs in a period equal to 80 % of a time constant of the sustain discharge.

50. The drive method of claim 43, wherein

a waveform of the voltage applied to the electrode pair in the sustain step has a slope requiring a duration T to at least one of rise and fall.

51. The drive method of claim 50, wherein

T is in a range having a width of ±20 % with respect to a reference value in a range of 250 nsec to 800 nsec.

52. The drive method of claim 51, wherein

the reference value of T is in a range of 250 nsec to 500 nsec.

53. The drive method of claim 50, wherein

the voltage waveform applied to the electrode pair in the sustain step is a pulse waveform that alternates repeatedly between high and low potentials, the high periods being of equal duration to the low periods, and

the change in the potential of the third electrode occurs in a range of T - 0.15 μsec to T + 0.25 μsec after the voltage waveform applied to at least one of the first and second electrode begins to change.

54. The drive method of claim 53, wherein

the change in the potential of the third electrode from V1 to V2 occurs in a range of T - 0.05 μsec to T + 0.15 μ sec after the voltage waveform applied to at least one of the first and second electrode begins to change.

55. The drive method of claim 53, wherein

the potential of the third electrode decreases from a potential V1 to a potential V2 in the range.

56. The drive method of claim 53, wherein

the voltage waveform applied to the first electrode is out of phase with the voltage waveform applied to the second electrode by a half cycle.

57. The drive method of claim 50, wherein

the voltage waveform applied to the electrode pair in the sustain step is a pulse waveform that alternates repeatedly between high and low potentials, the high periods being longer than the low periods, and

the change in the potential of the third electrode occurs in a range of T - 0.25 μsec to T + 0.25 μsec after the voltage waveform applied to at least one of the first and second electrode begins to change.

58. The drive method of claim 57, wherein

the change in the potential of the third electrode from V1 to V2 occurs in a range of T - 0.15 μsec to T + 0.05 μ sec after the voltage waveform applied to at least one of the first and second electrode begins to change.

59. The drive method of claim 57, wherein

the potential of the third electrode decreases from a potential V1 to a potential V2 in the range.

60. The drive method of claim 57, wherein

the voltage waveform applied to the first electrode is out of phase with the voltage waveform applied to the second electrode by a half cycle.

61. The drive method of claim 50, wherein

the voltage waveform applied to the electrode pair in the sustain step is a pulse waveform that alternates repeatedly between high and low potentials, the high periods being shorter than the low periods, and

the change in the potential of the third electrode occurs in a range of (i) T - 0.05 μsec to T + 0.35 μsec after the voltage waveform applied to at least one of the first and second electrode begins to rise, or (ii) T - 0.45 μsec

to T - 0.05 μsec after the voltage waveform applied to at least one of the first and second electrode begins to fall.

62. The drive method of claim 61, wherein

the change in the potential of the third electrode from V1 to V2 occurs in a range of (i) T + 0.05 μsec to T + 0.25 μsec after the voltage waveform applied to at least one of the first and second electrode begins to rise, or (ii) T - 0.35 μsec to T - 0.15 μsec after the voltage waveform applied to at least one of the first and second electrode begins to fall.

63. The drive method of claim 61, wherein

the potential of the third electrode decreases from a potential V1 to a potential V2 in the range.

64. The drive method of claim 61, wherein

the voltage waveform applied to the first electrode is out of phase with the voltage waveform applied to the second electrode by a half cycle.

65. A drive method for a plasma display panel device that includes (i) a panel unit having a pair of a first and a second electrode and a third electrode that intersects the electrode

pair to define a discharge cell, and (ii) a drive unit that drives the panel unit using the drive method, which has a write step and a sustain step, by applying, in the sustain step, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes, wherein

in the sustain step, the drive unit changes a potential of the third electrode from V0 to V1 prior to the sustain discharge, and from V1 to V2 after the sustain discharge, and

the potentials V0, V1 and V2 are set so that V1 > V0 and V1 > V2, or V0 > V1 and V2 > V1.

66. The drive method of claim 65, wherein

in the sustain step, the drive unit increases the potential of the third electrode from V0 to V1 prior to a first sustain discharge, sustains the potential V1, and decreases the potential of the third electrode from V1 to V2 after a second sustain discharge that is subsequent to the first sustain discharge.

67. The drive method of claim 66, wherein

in the sustain step, the drive unit decreases the potential of the third electrode from V0 to V1 prior to a

first sustain discharge, sustains the potential V1, and increases the potential of the third electrode from V1 to V2 after a second sustain discharge that is subsequent to the first sustain discharge.

68. The drive method of claim 65, wherein

a cycle of the voltage waveform applied to the third electrode in the sustain step is an integer multiple of a cycle of the voltage waveform applied to the electrode pair.

69. The drive method of claim 65, wherein

a binding capacity of the first electrode with the third electrode is different from a binding capacity of the second electrode with the third electrode, and

the drive unit increases the potential of the third electrode when a potential of the electrode in the pair with the greater binding capacity is high.

70. A drive method for a plasma display panel device that includes (i) a panel unit having a pair of a first and a second electrode and a third electrode that intersects the electrode pair to define a discharge cell, and (ii) a drive unit that drives the panel unit using the drive method, which has a write step and a sustain step, by applying, in the sustain

step, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes, wherein

the drive unit detects a characteristic of an image for display by the panel unit, and performs a control in the sustain step to change a potential of the third electrode according to the detected characteristic.

71. The drive method of claim 70, wherein

the drive unit detects a brightness average of the image as the characteristic.

72. The drive method of claim 71, wherein

the drive unit further detects a temperature of the panel unit as the characteristic, and conducts the control based on the detected brightness average and temperature.

73. The drive method of claim 70, wherein

a waveform of the voltage applied to the third electrode in the sustain step is a pulse waveform;

the change in the potential of the third electrode during the sustain discharge corresponds to a fall in the pulse waveform.

74. The drive method of claim 70, wherein

the voltage waveform applied to the third electrode in the sustain step is in synchronization with the voltage waveform applied to the electrode pair.

75. The drive method of claim 70, wherein

in the sustain step, the control by the drive unit is conducted at a fall time of the voltage waveform applied to the third electrode.

76. A drive method for a plasma display panel device that includes (i) a panel unit having a pair of a first and a second electrode and a third electrode that intersects the electrode pair to define a discharge cell, and (ii) a drive unit that drives the panel unit using the drive method, which has a write step and a sustain step, by applying, in the sustain step, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes, wherein

in the sustain step, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to hasten the generation of the sustain discharge in comparison to when the potential is not changed.

77. A drive method for a plasma display panel device that includes (i) a panel unit having a pair of a first and a second electrode, a third electrode that intersects the electrode pair to define a discharge cell, and a phosphor layer disposed over the third electrode, and (ii) a drive unit that drives the panel unit using the drive method, which has a write step and a sustain step, by applying, in the sustain step, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes, wherein

in the sustain step, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to shift a region in which the sustain discharge is generated closer to the phosphor layer in comparison to when the potential is not changed.

78. A drive method for a plasma display panel device that includes (i) a panel unit having a pair of a first and a second electrode and a third electrode that intersects the electrode pair to define a discharge cell, and (ii) a drive unit that drives the panel unit using the drive method, which has a write step and a sustain step, by applying, in the sustain step, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between

the first and second electrodes, wherein

in the sustain step, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to shift a discharge path of the sustain discharge closer to the third electrode in comparison to when the potential is not changed.

79. A drive method for a plasma display panel device that includes (i) a panel unit having a pair of a first and a second electrode and a third electrode that intersects the electrode pair to define a discharge cell, and (ii) a drive unit that drives the panel unit using the drive method, which has a write step and a sustain step, by applying, in the sustain step, a voltage to the third electrode and a voltage to the electrode pair, so as to generate a sustain discharge between the first and second electrodes, wherein

in the sustain step, the drive unit performs a control in which a potential of the third electrode is changed during the sustain discharge, so as to lengthen a discharge path of the sustain discharge in comparison to when the potential is not changed.